

We claim:

1. A method of generically emulating devices in a device connectivity protocol, the method comprising:

5 processing a description of a device to be emulated in the device connectivity protocol, the description specifying a set of actions of the device;

 in response to receiving an action request per the device connectivity protocol, validating whether the action request matches an action out of the set of actions specified in the description;

10 upon validating the action request to match the action, performing a default behavior consistent with the description.

2. The method of claim 1 wherein performing the default behavior comprises producing a response message containing a default value consistent with a data type
15 specified for a return parameter of the action in the description.

3. The method of claim 1 wherein performing the default behavior for an action having a set of input and output parameters corresponding to state variables of the device comprises:

20 setting the corresponding state variables of the device to values of the respective input parameters contained in the action request; and

 producing a response with output parameters set to values of the corresponding state variables of the device.

25 4. The method of claim 1 further comprising:

 providing hooks to interface user-provided action behavior implementations, if any, for the set of actions;

 upon validating the action request to match the action, first checking whether there is a user-provided action behavior implementation for the action; and

performing the default behavior consistent with the description if there is no user-provided action behavior implementation, and otherwise performing the user-provided action behavior implementation for the action.

5 5. The method of claim 1 wherein the hooks interface user-provided action behavior implementations of some number fewer than all of the set of actions.

6. The method of claim 1 further comprising:
applying a defect behavior to messages produced to emulate the device in the
10 device connectivity protocol;

7. The method of claim 6 wherein the defect behavior is applied to packets of a particular type.

15 8. The method of claim 6 wherein applying the defect behavior comprises invoking a user-provided implementation of the defect behavior.

9. The method of claim 1 further comprising randomly applying a defect behavior out of a set of defect behaviors to messages produced to emulate the device in the device
20 connectivity protocol.

10. A method of emulating devices in a device connectivity protocol, the method comprising:
reading a defect configuration representing in a tagged text format at least one
25 defect behavior to be applied to a type of packet transmitted from an emulated device per the device connectivity protocol;

upon producing a packet of a type for which a defect behavior is represented in the defect configuration, applying the defect behavior to the packet; and
transmitting the packet as modified by applying the defect behavior.

11. The method of claim 10 wherein applying the defect behavior comprises invoking a user-provided implementation of the defect behavior.

12. The method of claim 11 further comprising randomly applying a defect
5 behavior out of a set of defect behaviors to messages produced to emulate the device in the device connectivity protocol.

13. Computer-readable media having stored thereon a software framework of a generic device emulator for execution on a computer to provide emulation of an
10 operation of a device within a device connectivity architecture consistent with a textual description of the device, wherein the description of the device specifies data formats of requests and responses for a set of actions that the device is capable of, the generic device emulator comprising:

program code for receiving action requests directed to the device within the
15 device connectivity architecture;
program code for validating whether an action request matches that of an action specified in the description; and
program code for performing a default behavior producing a response for the action consistent with the data format specified in the description.

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14. The computer-readable media of claim 13 comprising:

program code for providing hooks to interface user-provided action behavior implementations of any number of the set of actions; and
program code for checking upon validating that an action request matches that of
25 the action specified in the description whether a user-provided action behavior implementation is presently hooked for the action; and
program code operating in a case that a user-provided action behavior implementation is presently hooked for the action to invoke the user-provided action behavior implementation in place of the default behavior.

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15. The computer-readable media of claim 13 wherein performing the default behavior comprises producing a response message containing a default value consistent with the data format of the response specified for the action in the description.

5 16. The computer-readable media of claim 13 wherein the program code for performing the default behavior for the action in which the data format of the request and response has a set of input and output parameters corresponding to state variables of the device comprises:

 program code for setting the corresponding state variables of the device to values
10 of the respective input parameters contained in the action request; and
 program code for producing the response with output parameters set to values of the corresponding state variables of the device.

 17. The computer-readable media of claim 13 further comprising:
15 program code for reading a defect configuration representing in a tagged text format at least one defect behavior to be applied to a type of packet transmitted from the emulation of the device within the device connectivity architecture;
 program code for applying the defect behavior to a packet upon producing the packet of a type for which a defect behavior is represented in the defect configuration,;
20 and
 program code for transmitting the packet as modified by applying the defect behavior.